# TAB 2

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

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| POWER INTEGRATIONS, INC., a Delaware corporation,<br><br>Plaintiff,<br><br>v.<br><br>FAIRCHILD SEMICONDUCTOR INTERNATIONAL, INC., a Delaware corporation, and FAIRCHILD SEMICONDUCTOR CORPORATION, a Delaware corporation,<br><br>Defendants. | C.A. No. 04-1371-JJF |

**SUPPLEMENTAL REBUTTAL EXPERT REPORT OF ROBERT BLAUSCHILD**

1. I, Robert Blauschild, am being offered as an expert to testify on behalf of Plaintiff Power Integrations, Inc. ("PI") in the above captioned matter. I previously submitted reports regarding the infringement of U.S. Patent Nos. 6,229,366 B1 (the '366 patent), 6,249,876 B1 (the '876 patent), and 6,107,851 (the '851 patent) by Defendants Fairchild Semiconductor Corporation and Fairchild Semiconductor International, Inc. ("Fairchild"), and the validity of those same patents. I am submitting this report in rebuttal to the supplemental report regarding PI's patents submitted by Dr. Paul Horowitz on December 29, 2006.

## I. QUALIFICATIONS AND PROFESSIONAL EXPERIENCE

2. My qualifications and professional experience are set forth in my initial expert report.

## II. INFORMATION CONSIDERED

3. In addition to the information cited in my initial expert reports, which I incorporate herein by reference, I have reviewed and considered the information specifically cited in this report including the following:

a. Supplemental Expert Report of Dr. Paul Horowitz.

b. Exhibits to Dr. Horowitz's Expert Report.

c. References and materials cited in Dr. Horowitz's Expert Report.

d. Documents produced by Dr. Horowitz since serving his Supplemental Report, including demonstration circuits and other materials referenced in Dr. Horowitz's Supplemental Report;

e. My personal inspection, on January 29, 2007, of the demonstration and test circuits described in Dr. Horowitz's Supplemental Report;

f. Deposition transcripts from Dr. Horowitz's deposition of January 30-31, 2007.

4. For purposes of this report, I have assumed that all references cited by Dr. Horowitz are prior art. Nevertheless, I offer no opinion as to whether these references are prior art under the patent statutes.

5. I have formed the opinions set forth in this document based on my review of the information referenced above and on my experience. As I continue to work on this case, I may acquire additional information and/or supplemental insights that result in additional opinions. I note that Fairchild and Dr. Horowitz have modified in a number of respects the positions they originally provided in their claim construction, non-infringement, and invalidity contentions and reports. I have attempted to understand those differences and respond to what I understand to be Dr. Horowitz's and Fairchild's current arguments. I reserve the right to supplement my report in

light of continuing discovery, opinions from Fairchild's experts, and/or trial or deposition testimony. In addition, I note that Dr. Horowitz explicitly stated during his deposition that he was not sure what he would testify to at the upcoming trial, and I reserve the right to provide rebuttal opinions and testimony in response to his testimony, or that of Fairchild's other experts or fact witnesses.

6. I further reserve the right to use animations, enlargements of exhibits, and/or demonstratives, and other devices to illustrate my rebuttal opinions.

## III. SUMMARY OF REBUTTAL OPINIONS

7. I expect to testify that the asserted claims of the '366, '851, and '876 patents are not anticipated by the prior art relied upon by Dr. Horowitz in his reports. Specifically, I intend to testify that each of the prior art references cited by Dr. Horowitz is missing one or more of the limitations that are set forth in the asserted claims of the '366, '851, and '876 patents. I also intend to testify that the asserted claims of the '366, '851, and '876 patents would not have been obvious to one of ordinary skill in the art at the time of each invention in view of the prior art relied upon by Dr. Horowitz. I further intend to testify that the asserted claims of the '366, '851, and '876 patents would be understood by those skilled in the art and are therefore not indefinite.

## IV. 35 U.S.C. § 102 AND § 103 UNDERSTANDINGS

8. It is my understanding, under 35 U.S.C. § 102, that to anticipate a claim means that each individual reference must disclose every limitation of that claim of the patent, or the limitations must be inherent in the reference. In order for a limitation to be inherent in a reference, one of skill in the art would understand that the limitation must be present as a matter of technical necessity in the context of the reference, not that the limitation could or might be present, for example, as a choice of the designer.

9. I understand that a claim is invalid for obviousness under 35 U.S.C. § 103 if two or more references in combination disclose, either expressly or inherently, or render obvious each and every limitation of the claim, and one of ordinary skill would have been motivated to combine the two or more references in a manner that would embody or teach the claimed invention. I further understand that there must be a demonstrated motivation to combine the references to arrive at the claimed invention and such motivation can not be found from a hindsight examination of the art in view of the claimed invention. I also understand that a claim can be obvious in light of a single prior art reference, but there must be a teaching, suggestion or motivation to modify the reference to achieve the claimed invention. I understand there is a question concerning the "motivation to combine" standard and, therefore, I have addressed Dr. Horowitz's contentions in the alternative by presuming such a motivation even though I do not believe Dr. Horowitz has sufficiently identified such in the prior art upon which he relies. I further understand that secondary considerations such as commercial success or long felt need, for example, should be considered if evidence of them is present and may provide objective indicia of non-obviousness.

## V. SECONDARY CONSIDERATIONS

10. Dr. Horowitz does not address any of the secondary considerations of non-obviousness in his Supplemental Report, but these considerations provide strong evidence that none of the asserted claims is obvious. For example:

- The Power Integrations products which incorporate the patented inventions have been commercially successful as evidenced by the testimony and documents provided in the first trial regarding their sale and popularity among customers;

including specific testimony about the demand for the patented features. [Trial Transcript at 312:3-6; 317:1-14; 647:2-21; 784-785; 798-800.]

- The Fairchild infringing parts which, as established in the first trial, incorporate Power Integrations' patented inventions, have also been commercially successful, and that success was linked to demand for the patented features. [Trial Transcript at 583:2-19; 733:13-20; 784-785; 798-800.]
- The evidence from Fairchild concerning its development of the infringing products strongly suggests that Fairchild copied the patented inventions.
- With regard to the frequency jitter inventions, there was a long felt need to solve the problem of EMI in switching power supplies but the prior art taught away from the claimed inventions to solve this problem using large, expensive filtering components or very complicated, programmable-modulation schemes, that cannot be practically implemented in a commercial product.
- Much of the prior art relied upon by Dr. Horowitz, including, for example, the Martin '417 patent, which issued in 1987, the Wang article from 1993, the Habetler article from 1991, the Power Integrations SMP devices which were available in the late 80s and early 90s as well many of the "additional" reference cited by Dr. Horowitz as "background" were all available for a number of years before the invention of the patents, yet none of the many companies working to produce commercial PWM controller ICs ever combined the art in the manner suggested by Dr. Horowitz – a fact he freely admits. [E.g., Horowitz 1/30/07 deposition at 170:20–171:3.]

## VI. TECHNOLOGY OVERVIEW

11. I previously explained several relevant concepts related to the patents and technology in this case. That discussion is still relevant and I intend to provide a similar tutorial

concerning the technology in the upcoming trial. Dr. Horowitz's Supplemental Report, however, raises several issues that require further, specific technical explanation to put them in the proper context.

12. Dr. Horowitz admits he has no experience with IC design work, and this is reflected in several of his opinions. He completely misses the substantial effort and innovation necessary to combine components that are fundamentally incompatible. This is no small task, even if one adopts the broad view Dr. Horowitz takes of the references' "teachings" instead of the specific descriptions of the implementation of the features described in the references.

13. For example, Dr. Horowitz relies on references that disclose circuits composed of discrete components. To support his contention that these references invalidate, Dr. Horowitz either ignores the teachings in the patents that the claimed circuits are directed to "integrated frequency jitter" and "integrated soft start" or blithely concludes that one of "ordinary skill" could handle the "implementation detail" of integrating the prior art. An integrated circuit combines many discrete components onto a single silicon crystal, or "chip." This leads to cost and size benefits. The art of designing integrated circuits is a specialty in the general field of electronic circuit design.

14. While I agree that economically integrating discrete components into an integrated circuit is often a generalized goal of designers, it is no simple task to accomplish such a goal; especially in the area of high-voltage analog circuits. For example, the manufacturing processes for building the various components may themselves be incompatible and developing a methodology for manufacturing them in the same integrated circuit is, in and of itself, a substantial engineering task. Dr. Horowitz's misjudgment of the difficulties in integrating functions of the type at issue here is evidenced by the fact that many companies had the

opportunity to do so over the years, but I am not aware of any commercial product that successfully integrated the claimed features before Power Integrations did so with the inventions of these patents.

15. A related issue is Dr. Horowitz's ignoring the "integrated" characteristic of the inventions, for example by redefining the simple term "internal" used in the Court's construction to mean something completely unrelated to whether the circuit or signal is inside or outside an integrated circuit. Only by improperly blurring the lines, or hypothesizing (with no actual experience as a basis) that discrete components being integrated is an "implementation detail" can Dr. Horowitz justify relying on prior art that is nothing near the inventions described and claimed in the Power Integrations patents.

## VII. THE REFERENCES RELIED UPON BY DR. HOROWITZ

16. In his report, Dr. Horowitz relies upon a number of references to support his conclusions that the claims of Power Integrations' patents are anticipated or obvious. As detailed in my analyses of these references below and in my earlier reports, none of them alone anticipates or in any combination proposed by Dr. Horowitz renders obvious any of the asserted claims.

17. I have relied both on Dr. Horowitz's analysis and my own reading of the references because, as discussed below, in many instances, Dr. Horowitz merely makes conclusory statements, without specifically identifying where corresponding claim elements allegedly are taught in his references or giving reasons why he believes elements would be inherent or obvious. I reserve the right to respond if and when Dr. Horowitz adds such information to his opinions.

18. Dr. Horowitz states in his Supplemental Report that he stands by the opinions expressed in his earlier reports, and that he incorporates those opinions by reference. [Horowitz Supplemental Report ¶3.] As I have already responded to Dr. Horowitz's previous report on validity, I will not rehash my disagreements with Dr. Horowitz's earlier opinions here. Given that Dr. Horowitz has changed many of his opinions throughout the course of this case, though, I do not respond in this report to any materials Dr. Horowitz seeks to "incorporate by reference." Instead, I respond to the contentions explicitly set forth in Dr. Horowitz's Supplemental Report.

19. As with his earlier report, Dr. Horowitz again suggests that the '366 and '851 patents disclose a generic "soft start" and "frequency jitter" [Horowitz Supplemental Report ¶ 25], but again this is not incorrect. The '851 and '366 patents disclose, as their title and objectives explicitly note, "integrated soft start" and "integrated frequency jitter." Dr. Horowitz appears to ignore this fundamental teaching in an effort to argue that the patents are invalid on the basis of more basic soft start and frequency modulation technologies that are not integrated, but which instead use external circuitry and signals. As noted before, this sort of argument trivializes the art of integrated circuit design and bypasses the actual inventions — the point of the inventions is an integrated soft start circuit that is regulation-loop-independent, and frequency variation that is cyclical during normal operation for EMI reduction, and none of the references discloses or teaches the claimed inventions (or the combination thereof found in the dependent claims).

20. As I pointed out in prior reports, conventional soft start functionality and proposed external circuits for varying switching frequency were disclosed in several references cited in the prosecution of the PI patents, including in the specification itself. The fact that the PI patents were issued by the Patent Office illustrates many of the differences between the

inventions and the prior art ignored by Dr. Horowitz. Dr. Horowitz has stated that he is not sure that the patent examiner is one of skill in the art, and he admitted during his deposition that he did not read much of the cited art. My understanding is that the examiner must be considered to be one of skill in the art and that an understanding of the cited art is necessary for an objective evaluation of any non-cited art relied upon to assert invalidity.

21. The Court's claim construction order also specifically rejects the line of argument Dr. Horowitz makes about his "generalized" prior art, rendering Dr. Horowitz's statements inapplicable to the patents (including the majority of the statements regarding various references described in paragraphs 40-61 of Dr. Horowitz's Supplemental Report). Moreover, of all the references Dr. Horowitz mentions in paragraphs 40-61 of his Supplemental Report, not a single one discusses a frequency jitter circuit, external or internal, that has any connection to any soft start circuit, external or internal.

22. Having reviewed the deposition testimony of Dr. Horowitz and his production of documents following his Supplemental Report, I note that a substantial portion of Dr. Horowitz's opinions regarding the '851 patent are based on events that happened after his report was signed, including additional testing Dr. Horowitz did nearly a month after serving his Supplemental Report. I have done my best to address these matters here, but I reserve the right to further respond to any opinions or materials Dr. Horowitz has developed since serving his report in December.

23. At the hearing in this matter, I may describe each of the references relied upon by Dr. Horowitz. My trial testimony may also include animations, demonstratives, enlargements, and other devices to illustrate various aspects of the references cited by Dr. Horowitz.

## VIII. REBUTTAL OPINIONS FOR THE '876 PATENT

### A. Conclusions Regarding the '876 Patent

24. At the hearing in this matter, I expect to testify that Claim 1 of the '876 patent is not anticipated or rendered obvious by the references cited by Dr. Horowitz. At the hearing, I intend to point out that each of the references cited by Dr. Horowitz lacks limitations required by the asserted claim of the '876 patent. I may also testify about the context of the '876 invention and the technology preceding and following the '876 invention, including its differences from the claimed invention.

### B. The Validity of the '876 Patent

25. Dr. Horowitz points to no prior art that teaches the simple and elegant solution for reducing EMI employing a counter coupled to a digital to analog converter which in turn drives the oscillator frequency control input. To the contrary, as discussed below, each of the references cited by Dr. Horowitz teaches away from such a solution.

26. Dr. Horowitz opines that three references anticipate Claim 1 of the '876 patent, each of which I address in further detail below, showing that none of these three ROM-based circuits anticipates Claim 1 of the '876 patent. Dr. Horowitz previously admitted that a counter is not coupled to a digital to analog converter (DAC) as required by Claim 1 of the '876 patent when there is "a layer of code-transforming logic between the counter and the DAC." [Horowitz Rebuttal Report ¶ 99.] In that same report, Dr. Horowitz said that such intermediary logic "performs exactly the same transformation as a ROM lookup table" and that "the counter is thus not connected to the DAC." [Horowitz Rebuttal Report ¶ 99.] During the first trial in this case, Dr. Horowitz similarly testified that a counter is not coupled to a DAC when there is "code conversion logic" in between the two, because the intermediary logic "breaks the control function between the counter and the D to A such that what comes out of the counter is not what

goes into the D to A." [Trial Transcript at 1058:2-1059:7.] Given that prior testimony, I cannot understand how Dr. Horowitz can now say that any of the ROM-based circuits anticipates Claim 1 of the '876 patent.

27. Dr. Horowitz's attempt to rely on the jury finding of infringement by Fairchild to justify his flip-flop is puzzling, as he had to admit that none of the Fairchild parts found to infringe incorporate a ROM, or any memory device, between their counter and DAC. Rather, the Fairchild devices incorporate a multiplexer which, as I explained in the first trial, functions to directly pass selected signals from the counter to the DAC. Because the two structures, a multiplexer in the Fairchild parts on the one hand, and a ROM in the prior art on the other, are completely and fundamentally different in their structure and operation, finding the former to be coupled and the latter to not be is perfectly consistent and, as I have maintained from the beginning, is the only proper conclusion that can be reached.

28. I do not agree with Dr. Horowitz that any of the ROM-based circuits renders Claim 1 of the '876 patent obvious. The only way Dr. Horowitz can argue that any of the ROM circuits renders Claim 1 of the '876 patent obvious is to suggest that one of skill in the art would remove the ROM from the references entirely and alter the frequency in some other way. That is a bizarre suggestion, because removing the ROM from these three ROM-based references is totally contrary to their teachings, which all use the ROM to alter the frequency in either a randomized or "programmed" manner. Dr. Horowitz suggests that a "ROMless circuit configuration would also have been part of the skilled practitioner's toolkit" [Horowitz Supplemental Report ¶¶ 68, 70, 72], but again that ignores the fact that each of the three ROM references teach the use of the ROM, not some other unstated approach.

29. Dr. Horowitz's claim that the ROM art renders Claim 1 of the '876 patent obvious is also flawed because it ignores that the ROM circuits all teach altering frequency in a manner fundamentally different from the claimed circuit. Dr. Horowitz's argument ignores this portion of the Court's claim construction, which provides that frequency jittering means "varying the switching frequency of a switch mode power supply about a target frequency in order to reduce electromagnetic interference." Dr. Horowitz's Supplemental Report and its attached claim charts make no explicit mention that any of the ROM art varies a frequency about a target frequency. When asked during his deposition about the fact that the references do not teach varying a frequency about a target frequency, Dr. Horowitz argued that the fact that one could compute an average frequency suggested a target frequency and that "the central frequency or the middle of the spectrum" was a target frequency. [Horowitz 1/30/07 deposition at 63-71.] I disagree. Any set of random numbers is going to have an average, but that does not mean that the randomly selected numbers varies about a target. Nor does the use of a controllable oscillator, which may have a "base" frequency, mean that there is necessarily a "target" frequency when using such an oscillator, especially when the whole purpose is randomness. I therefore disagree with the implicit suggestion in Dr. Horowitz's Supplemental Report that the ROM art teaches (or renders obvious) varying a frequency about a target frequency.

**1. Detailed Response to Dr. Horowitz's Claim Charts for the '876 Patent**

**a. Martin '417 patent**

30. Dr. Horowitz relies on U.S. Patent No. 4,638,417 ("Martin" or "the '417 patent"), but Martin is missing several elements of Claim 1 of the '876 patent and does not anticipate. First and foremost, as noted above, Martin does not have the counter coupled to a digital to analog converter as required by Claim 1. Instead, Martin places an EPROM between his counter and digital to analog converter. The whole point of the Martin patent is to use the EPROM to

vary frequency in a pseudo-random manner to avoid generating a known frequency "signature" in military applications. [E.g., Martin at col. 1, lines 25–58 and col. 3, lines 1–20.] The EPROM purposely decouples the counter and the digital to analog converter, so that the counter output does not drive the digital to analog converter in the simple known and fixed way described in the '876 patent. Martin thus teaches away from the '876 invention.

31. When asked about the ROM configuration described in Martin during the first trial, Dr. Horowitz said "[t]he last claim element that requires a counter coupled to the digital to analog converter among other things is not met [when] there is a block of logic that performs a code conversion transformation like an EPROM." [Trial Transcript at 1064:2-10.] Given that testimony, Dr. Horowitz's present argument that Martin anticipates Claim 1 of the '876 patent is completely contradictory.

32. In footnote 34 of his Supplemental Report, Dr. Horowitz says that I asserted during the October trial that a counter was coupled to the DAC despite intermediary code transformation logic. I said no such thing, and the Fairchild structure we were discussing in the October trial, with a multiplexer between the counter and the digital to analog converter, is not "code transformation logic" as Dr. Horowitz suggests. During the first trial, I noted that putting a multiplexer between the counter and the digital to analog converter does not decouple the two because all of the control signals for the digital to analog converter come from the counter; they just pass through the multiplexer along the way. [Trial Transcript at 465:2-8.] Dr. Horowitz was incorrect when he argued that the circuit he now calls "code transformation logic" (and then called a "code conversion block") decoupled the counter from the DAC in the Fairchild parts.

33. As noted above, Martin also does not anticipate Claim 1 of the '876 patent because it does not vary a frequency about a target frequency and thus lacks the claimed frequency jittering.

34. I also disagree with Dr. Horowitz's conclusion regarding obviousness based on Martin. As noted above, Dr. Horowitz's obviousness arguments for the ROM circuits requires that the ROM be removed, but removing the EPROM and coupling the counter to the digital to analog converter in Martin would defeat the whole purpose of the Martin circuit. There is no question that removing the pseudo-randomly programmed ROM from Martin's circuit would result in exactly the kind of "signature" in the power supply that it is Martin's purpose to eliminate. Dr. Horowitz provides no justification as to why one of skill in the art would throw out the fundamental teaching of Martin to arrive at the invention of '876 Claim 1.

35. Paragraph 68 of Dr. Horowitz's Supplemental Report contains a proposal to program a ROM for f(n)=n and then remove the ROM. This is senseless. First, no one would include a ROM to do such a thing. Second, it is not obvious that Martin would even allow a f(n)=n "code conversion," because there is no code conversion in Martin. Martin teaches the opposite of the code conversion Dr. Horowitz suggests, because Martin employs a memory programmed with pseudorandom codes and addressed by a counter. Dr. Horowitz's argument in this paragraph boils down to a proposal to do a code conversion, then to get rid of the code

conversion, something that would not have been obvious (much less make sense) to one of skill in the art.[1]

36. Dr. Horowitz also states that no innovation would be required to remove the EPROM of Martin and to modify Martin to read on the '876 patent. [Horowitz Supplemental Report chart B2 at 7.] But as noted above, Dr. Horowitz's argument only makes sense if you ignore the fundamental teachings of the reference, which would not have been obvious to one of ordinary skill in the art. Dr. Horowitz's statement that one of skill in the art would have been motivated to combine Martin with some different and contrary approach to frequency modulation is conclusory, and there is no evidence that anyone did (or would have been motivated to) modify Martin in the manner Dr. Horowitz suggests.

37. Dr. Horowitz attempts to rely on his opinion that Martin's claims do not all require pseudo-random variation. All the Martin claims, however, do require a "storage means" and the only teaching corresponding to that element in the specification is a memory programmed with a pseudo-random waveform. There is nothing in the reference that suggests the ROM is not required. Because the memory is claimed in all the claims, one of skill in the art would be further taught away from removing that memory entirely as suggested by Dr. Horowitz.

38. Finally, Dr. Horowitz suggests that, because one of ordinary skill would know how to generate a stair-stepped waveform with a counter and a DAC (from, for example, the

[1] Although the "Hardin" patent is not included in the list of references Fairchild may rely on at trial, Dr. Horowitz suggests in paragraph 68 of his Supplemental Report that one of skill in the art would substitute a waveform found in the Hardin patent into the Martin patent disclosure for some reason. As I noted when he made a similar suggestion before, I disagree. Dr. Horowitz gives no reason why anyone would be motivated to change the teaching of the Martin patent based on Hardin, or how such a combination would be accomplished; his conclusion is, again, hindsight.

references cited in his ¶ 58) that it would be obvious to use such a circuit in place of the ROM-based circuit of Martin. Again, such a suggestion is unsupportable. The references relied upon do not even relate to EMI reduction or power supply technology and, therefore, are not even relevant to the issue. Further, they add nothing to Martin, which already has a counter and a DAC but also includes the ROM the inventor considered essential to his invention. The fact that circuits with a counter and a DAC exist in the literature for completely different purposes simply would not suggest to one of ordinary skill to modify the Martin circuit to throw away its fundamental teaching.

39. As noted above, Martin also does not render Claim 1 of the '876 patent obvious because it does not teach or suggest to vary a frequency about a specified target frequency and thus lacks the claimed frequency jittering.

40. Finally, despite the longevity of the Martin patent in the art, and the substantial number of companies working on products in the field, to my knowledge no one ever produced a circuit along the teachings of Martin or as Dr. Horowitz suggests would be obvious from Martin (before PI filed their patent). As explained above, this and other evidence of secondary considerations support the conclusion that '876 Claim 1 is not obvious.

**b. Wang & Sanders**

41. Dr. Horowitz opines that an article by Wang and Sanders ("Wang") anticipates Claim 1 of the '876 patent. I disagree. Wang does not have the counter coupled to a digital to analog converter of Claim 1. Instead, Wang places a ROM between his counter and digital to analog converter. As described above with reference to Martin, this configuration is not the same the invention of the '876 patent, and it does not anticipate Claim 1.

42. As noted above, Wang also does not anticipate Claim 1 of the '876 patent because it does not vary a frequency about a target frequency and thus lacks the claimed frequency jittering. Wang's teaching of an idealized frequency "envelope," and his requirement that "average" frequency remain constant, is not the same as the claimed variation about a target frequency.

43. In the alternative, Dr. Horowitz argues that Wang renders Claim 1 of the '876 patent obvious. As with Martin, Dr. Horowitz's obviousness argument is premised on removing the ROM Wang shows between the counter and the digital to analog converter and building a circuit in a manner contrary to the teachings of Wang. Most of the Wang paper details why the ROM is necessary and how it should be designed, including pages of design equations regarding dependencies and how the digital to analog converter should be driven by the ROM to achieve the EMI reduction Wang seeks. The ROM purposely decouples the counter and the digital to analog converter, so that the counter output does not drive the digital to analog converter. Wang thus teaches away from the '876 invention, and does not render obvious Claim 1 of the '876 patent.

44. As noted before, removing the ROM and coupling the counter to the digital to analog converter would render the Wang reference meaningless. Dr. Horowitz provides no opinion as to why one of skill in the art would throw out the fundamental teaching of Wang to arrive at the invention of Claim 1.

45. In discussing his ROM-less, re-designed version of Wang, Dr. Horowitz states that "the resulting configuration would represent a less than optimum frequency jittering function (relative to the ideal spectral shaping of EMI to which the article aspires)." This argument ignores the whole focus of the Wang article, and Dr. Horowitz's opinion could be paraphrased as

"although the resulting configuration wouldn't be what Wang teaches." As noted above, the secondary considerations are again directly contrary to Dr. Horowitz's conclusion.

**c. Habetler & Divan**

46. Dr. Horowitz's last set of claim charts for the '876 patent address an article by Habetler & Divan ("Habetler"). Before addressing the details of Habetler, I want to point out that Habetler does not deal with EMI in a power supply—it addresses a method for reducing acoustic noise in an inverter system. Because the '876 patent is about switched mode power supplies, Habetler is not the sort of reference that one looking to solve the EMI problem the '876 patent solves would normally look to. In fact, the design requirements for an inverter are significantly different from a switched mode power supply, and techniques used in one would not ordinarily be considered applicable to the other.

47. Dr. Horowitz's charts B5 and B6, respectively, state that Habetler anticipates and renders obvious Claim 1 of the '876 patent. Dr. Horowitz is incorrect on both counts.

48. Habetler does not have the counter coupled to a digital to analog converter of Claim 1. Instead, Habetler places an EPROM between his counter and digital to analog converter. Most of the Habetler paper details why the EPROM is necessary and how it should be designed, including how the digital to analog converter should be pseudo-randomly driven by the EPROM to achieve the acoustic noise reduction Habetler seeks. The EPROM purposely decouples the counter and the digital to analog converter, so that the counter output does not drive the digital to analog converter. Habetler thus does not anticipate but rather teaches away from the '876 invention.

49. As with Martin and Wang above, Dr. Horowitz suggests Habetler renders Claim 1 obvious because one could remove the EPROM and couple the counter to the digital to analog converter, but as discussed before this would render the Habetler reference meaningless. There is nothing in the reference that suggests the ROM is not required and essential to the authors' purpose. Dr. Horowitz provides no justification as to why one of skill in the art would throw out the fundamental teaching of Habetler to arrive at the invention of Claim 1.

50. Habetler also differs in that it does not use the simple modulation or "jittering" of the claim – instead, it teaches random modulation of switching frequency. The '876 patent discloses the exact opposite, with a simple counter and digital to analog converter approach. Dr. Horowitz says it would have been obvious to use Habetler to vary frequency in a non-random manner [Horowitz Supplemental Report ¶ 72], but that argument ignores Habetler's explicit teaching that "[a] better approach to sinusoidal modulation is a random modulation." [Habetler at 358.] In other words, the authors of the paper considered a non-random approach and explicitly rejected it as insufficient. Dr. Horowitz also fails to explain how an implementation of Habetler with non-random sinusoidal modulation (which Habetler teaches against using), would serve the purpose of the article or meet the limitations of Claim 1. This is yet another reason why Habetler teaches away from the '876 patent and does not render Claim 1 obvious.

51. Habetler also does not address frequency jittering as claimed in the patent. First, as noted above, Habetler does not deal with a power supply – it addresses a method for reducing acoustic noise in an inverter system. Both the preamble to Claim 1 and the Court's construction of frequency jitter describe a circuit for use in a power supply. Second, Habetler deals with acoustic noise and is not about EMI. Habetler thus does not meet the frequency jittering

limitation of Claim 1. Indeed, one of ordinary skill would not even look to Habetler at all because it is not the relevant art or closely analogous to the art of the '876 patent.

52. Habetler also says nothing about varying about a target frequency, as explicitly required under the Court's constructions. As noted above, Dr. Horowitz's suggestion that the fact that one can compute an average of several random frequencies means they have a "target frequency" is absurd; the issue of a target frequency has no meaning if one merely averages a random set of numbers, and the randomness taught in Habetler is thus directly contrary to the claimed invention. For these reasons, and the other reasons discussed above regarding Wang and Martin, and in view of the evidence of secondary considerations, I conclude that the claim would not be obvious in view of the Habetler reference.

## IX. REBUTTAL OPINIONS FOR THE '366 AND '851 PATENTS

### A. Conclusions Regarding the '366 and '851 Patents

53. At the hearing in this matter, I expect to testify that claims 9 and 14 of the '366 patent and claims 1 and 4 of the '851 patent are not anticipated or rendered obvious by the references cited by Dr. Horowitz. At the hearing, I intend to point out that each of the references cited by Dr. Horowitz lacks limitations required by the asserted claims of the '366 and '851 patents. I may also testify about the context of the '366 and '851 inventions and the technology preceding and following the '366 and '851 inventions, including its differences from the claimed inventions.

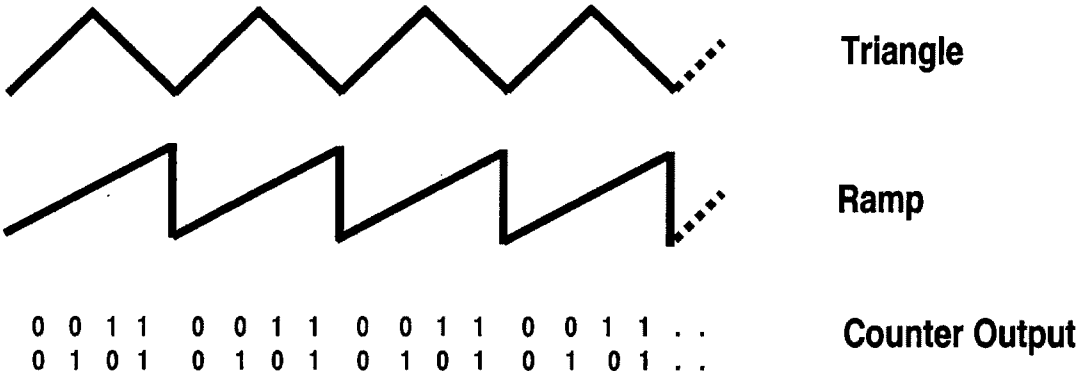
### B. The Validity of the '366 and '851 Patents

#### 1. General Response to Dr. Horowitz's Report re the '366 Patent

54. Dr. Horowitz discusses the PI '366 patent in paragraphs 73-102 of his Supplemental Report and makes several conclusory assertions that the '366 patent is anticipated,

rendered obvious, and indefinite. Although I discuss in greater detail below the specific reasons I disagree with Dr. Horowitz's conclusions regarding indefiniteness and the various references for which he has provided claim charts, I also have several general points worth noting before addressing the specific details of the references Dr. Horowitz cites.

55. Dr. Horowitz makes a number of statements and arguments in his report suggesting that a "single ramp" can be the soft start signal of the '366 and '851 patents. His suggestion is incorrect. Dr. Horowitz admitted during his recent deposition that a single ramp cannot be driving the soft start because that would be inconsistent with the disclosure of the patent and the Court's claim construction. Specifically, when reminded that Claim 14 of the '366 patent teaches the use of the frequency variation signal as the soft start signal, and that the frequency variation signal is cyclical under the Court's claim construction, Dr. Horowitz admitted his single ramp theory would be inconsistent with that construction. [Horowitz 1/30/07 deposition at 209.] Indeed, the only proper interpretation of the disclosure of the patents, including the language of "alternative" frequency variation signals Dr. Horowitz attempted to rely upon, (i.e. '366 patent at col. 6, lines 44-48) is that all of the alternatives involve repetitive signals. The graphic below illustrates the alternative frequency variation signals described by the '366 and '851 patents.



56. On the other hand, all of the art Dr. Horowitz cites in his report teach single ramp soft start, including the TEA2262. Because the single ramp art does not teach a methodology that is the same as or equivalent to the signal driving the claimed soft start circuit (and the resultant structures designed to deal with a single versus repetitive soft start signal are, accordingly, not equivalent structures), none of the single ramp art Dr. Horowitz cites anticipates the claims of the '366 patent.

57. Dr. Horowitz also argues that the patent is invalid in view of references that did some form of soft start using a "clamp" on or other methodology to "trick" the feedback signal, but the art cited during the prosecution of the '366 patent showed such conventional soft start methods, and the Examiner allowed the claims in view of this art. For example, the Pelly reference cited on the face of the '366 patent showed the use of an external capacitor circuit to clamp the feedback error voltage to achieve soft start in the conventional manner. The fact that the Examiner allowed the claims over the cited art showing conventional soft start using single ramps and feedback clamping presents another reason to discount Dr. Horowitz's opinions, and it certainly makes the bulk of the art Dr. Horowitz cites cumulative of what the Examiner had in front of him during prosecution.

58. Moreover, as noted above, Dr. Horowitz fundamentally underestimates the skill involved in the field of PWM integrated circuit design when he suggests that discrete and integrated implementations are interchangeable. Integrated implementations, as shown in the PI patents, require considerably more effort to design, as they require special design and manufacturing techniques to put all of the electrical components (resistors, capacitors, transistors, etc.) on a single silicon "chip" inside a plastic or ceramic package. Dr. Horowitz has admitted that he has never designed a PWM IC, or indeed any integrated circuit, and I attribute

much of Dr. Horowitz's glossing over the differences in design between discrete and integrated implementations to his lack of relevant experience. Regardless of the reason for Dr. Horowitz's disregard of the differences, though, the fundamental difference between the design of the two sorts of implementations directly contradicts Dr. Horowitz's suggestion that it would be obvious to switch between the two. The only way to suggest it would be have been obvious to do so is to use the teachings of the PI patents as a roadmap in hindsight, which I understand is an improper way to conduct a validity analysis.

### 2. Response to Dr. Horowitz's Indefiniteness Argument for the '366 Patent

59. In paragraphs 73-75 of his Supplemental Report, Dr. Horowitz again argues that Claim 9 of the '366 patent is invalid because it allegedly lacks definiteness. I disagree with his opinion. As an initial matter, I understand from reading Dr. Horowitz's deposition that he has conceded that a person of ordinary skill in the art would understand this claim, contrary to the statements in his Supplemental Report that the claim is indefinite. [Horowitz 1/30/07 deposition at 196-199.] To the extent that Dr. Horowitz's admission during his deposition does not resolve this issue, though, I note that Dr. Horowitz can only argue that the patent is indefinite if he ignores the context, language, figures, and claims of the patent. The '366 patent is about switching power supplies, and Claim 9 of the '366 patent explicitly recites a regulation circuit with a switch and a drive circuit, with the drive circuit driving the switch. These items clearly describe a circuit that is cyclic by nature and show that claim 9 refers to a switch cycle – that is, one cycle of the switch being first on for a period of time and then off for a period of time. The patent's figures also show oscillators and switching waveforms that confirm the fundamental nature of the claimed "regulation circuit." Therefore, the "maximum time period of the cycle"

referred to in the claim language would be understood to refer to a switch on/off cycle and some mechanism for the drive circuit to limit the on portion of the cycle to some maximum. The Examiner had no problem with this issue, and it is apparent that one of ordinary skill would similarly find no indefiniteness problem with the patent claims as written.

60. Dr. Horowitz repeats the indefiniteness argument in discussing dependent Claim 14 of the '366 patent [Horowitz Supplemental Report ¶ 95], but the argument for Claim 14 is completely dependent on his contention with respect to Claim 9 (i.e. whether Claim 9 teaches something cyclic to one of skill in the art). I therefore disagree with Dr. Horowitz's contention regarding a potential definiteness problem with Claim 14 for the same reasons set forth in the preceding paragraph with respect to Claim 9.

### 3. Detailed Response to Dr. Horowitz's Claim Charts for the '366 Patent Claim 9

#### a. TEA2262 + TEA2260/61 + AN376

61. Dr. Horowitz has grouped together a number of different items related to SGS-Thompson products and asserted that they somehow make up a single "reference" that invalidates the '366 patent, but his opinion in this regard is incorrect. No single one of these references (which include the TEA2260/61 device datasheet, an application note labeled AN-376, and the TEA2262 device data sheet) shows all of the elements of the claims of the '366 patent, and Dr. Horowitz previously treated these materials separately in his original analysis, with different contentions and claim charts for the 2260 and 2262. Given the various shortcomings of the different SGS-Thompson references Dr. Horowitz cites, I address each of

them below to illustrate how none of them, either alone or in combination, anticipates or renders obvious Claim 9 of the '366 patent.[2]

62. First, the 2260 and 2262 "references" are missing the soft start circuit of Claim 9 of the '366 patent. As noted before, the TEA2260 and TEA2262 rely on an external capacitor with specified range of 47nF to 1uF to implement soft start. [FCS1687339; FCS1686649.] Dr. Horowitz acknowledged that the TEA2260 relied on an external capacitor during his first deposition. [Horowitz 2/4/06 deposition at 78:14-18.] The conventional soft start in the TEA2260 is, therefore, like the distinguished prior art, and it is not an equivalent structure to the soft start circuit of the claims. During his first deposition, Dr. Horowitz also testified that the soft start portions of the TEA2260 and TEA2262 are the same. [Horowitz 2/4/06 deposition at 80:14-18.] This is confirmed by the documents. Therefore, the TEA2262 also lacks the claimed soft start circuit of the '366 patent.

63. Dr. Horowitz says in paragraph 79 of his Supplemental Report that the soft start circuit structure in the TEA2260 and TEA2262 is the same as taught in the '366 patent, but this opinion ignores the Court's construction of the term "soft start circuit" and his own prior testimony regarding what structures were required under the Court's constructions. The patent does not describe a "partly" internal soft start circuit, and Dr. Horowitz's prior testimony that the TEA2260 and TEA2262 rely on external capacitors for soft start shows that they do not operate in the same way as the claimed invention. Dr. Horowitz also previously testified that the soft start circuit of the patents required a number of elements including a latch and an AND gate, but

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[2] Dr. Horowitz admitted that he had no evidence regarding any actual sale or public use of the TEA2260, TEA2261, or TEA2262 devices themselves. As such, my understanding is that the only "prior art" is the documents and, for purposes of anticipation they cannot be treated together. However, because even when the disclosures of the documents are treated together the elements of the claims are not present, I presume for the purposes of this rebuttal that treating them together is appropriate.

the TEA2260/1/2 does not show either element, and Dr. Horowitz does not identify them in the references. Dr. Horowitz even admitted during his deposition that the TEA2262 does not show the latch and AND gate required by the Court's construction. [Horowitz 1/30/07 deposition at 231-32.] Indeed, the data sheet has a simple, undetailed box for its "soft start" and Dr. Horowitz had to admit he did not know what is actually contained in that box. Because the actual structure used in the TEA2260, TEA2261, or TEA2262 to implement soft start is not known by Fairchild's expert, it cannot meet its burden to establish that the prior art anticipates any asserted claim.

64. I also note that Fairchild's opinion counsel at the Sidley Austin law firm specifically stated in a written opinion dated June 6, 2006 ("the Sidley letter") that the TEA2262 does not include the claimed soft start circuit of the patents under the Court's construction. [FCS1693055.] Dr. Horowitz suggests in paragraph 82 of his Supplemental Report that the Sidley letter is somehow incorrect about the TEA2262 functionality, but Dr. Horowitz provides no explanation of what might be inaccurate about the Sidley letter. In fact, the Sidley letter is correct that the TEA2262 uses an external capacitor for soft start, something specifically excluded under the Court's construction of "soft start circuit." The Sidley letter also addresses the lack of a latch, AND gate, and frequency variation signal in the TEA2262, and the Sidley letter therefore correctly reaches the opposite conclusion from Dr. Horowitz, who ignores the actual structural requirements required under the Court's construction.

65. Another clear difference between the TEA2262 and the claimed invention is that the "ramp" signal is not repeating in the TEA2262, and it is certainly not the cyclical signal described in the patents as driving the soft start function.

66. Further, the TEA2260/1/2 references do not anticipate Claim 9 because they do not performed the claimed function recited for the soft start circuit. As explained in more detail below with regard to the '851 patent, the TEA2260/1/2 references describe controlling the maximum duty cycle, or "maximum time period," in a manner that is fundamentally different from using a maximum duty cycle signal generated by an oscillator as shown in the specification of the '366 patent. In the TEA2260/1/2 devices, the maximum time period is actually controlled by the same circuit and signal used for soft start. [*See* AN376 at p. 12.] The block labeled "soft start" in the block diagram also includes the indication "$T_{on(max.)}$ (60%)" showing that it also controls the maximum on time for the switch pulses. Because of this, the soft start block of the TEA2260/1/2 does not "provide a signal instructing said drive circuit to disable said drive signal during *at least a portion of* said maximum time period." For this additional reason, the TEA2260/1/2 cannot anticipate Claim 9.

67. Dr. Horowitz also refers to a series of waveforms he claims to have generated in connection with the use of a TEA2262 device in paragraph 80 of his report, but the cited waveforms do not answer any of the pertinent questions with respect to the TEA2262. These waveforms show a soft start function, but they provide no information about the structure or way the soft start is done. Because the Court's claim construction requires a specific soft start structure and method of operation, the mere presence of soft start functionality in the TEA2262 has no bearing on the validity of the patents.

68. In paragraph 81 of his Supplemental Report, Dr. Horowitz argues that the TEA2260 and TEA2262 render Claim 9 of the '366 patent obvious even if they do not anticipate. Again, Dr. Horowitz is incorrect. To support his opinion, Dr. Horowitz hypothesizes modifications to the actual TEA2262 to have it look like the claimed invention of the patent by

(1) first adding a periodic triangle wave oscillator to drive soft start, and (2) then adding a latch + AND gate to prevent repetitive soft starts. To paraphrase his opinion: the TEA2262 is missing two pieces of the required soft start circuit, but that's ok because I can take out what's there and add both of the missing pieces. Dr. Horowitz's efforts to redesign the TEA2262 to map it on to the claimed invention is total hindsight. There is simply no justification for suggesting that one of ordinary skill would substitute a different soft start functionality from the one chosen by the TEA2260/1/2 designers. The suggestion is further flawed in view of the fact that, as explained below, in a certain intended operating mode the voltage on the capacitor driving the soft start function of the TEA2262 actually does cycle, and in that case the soft start *occurs repeatedly by design*, and is not inhibited by a latch or some other mechanism – exactly the opposite of what Dr. Horowitz's hindsight argument suggests would be needed to render the claim obvious. As explained above, the non-obviousness of the claim is also strongly supported by the other evidence of secondary considerations present here.

**b. SMP240/260 + Keller article**

69. The SMP240, SMP260, and Keller article (referred to collectively as "the SMP260") do not invalidate because they too are missing the soft start circuit of independent Claim 9. The structure in these references is not the same as the corresponding structure or equivalent because the reference teaches "conventional" soft start whereby a control loop signal (feedback) is modified to limit duty cycle rather than using an independent circuit. An internal digital current source acts with a summing junction in the feedback circuit to provide soft start functionality. Accordingly, the SMP260 has a single PWM comparator that does not function at all like the independent soft start comparator of the corresponding '366 patent structure.

70. The structure of the SMP260 is further different, and not equivalent to the soft start circuit structure shown in the patent. The signal that drives the soft start function in the SMP260 is a one-time digital ramp, rather than a repetitive signal. Because of that, and unlike the Fairchild parts wherein their soft start function was driven by a *repeating counter*, the SMP260 has no structure corresponding to the latch and AND gate shown in the '366 patent; nor does it have an equivalent structure because such structure is not necessary to prevent repetitive soft start.

71. In paragraph 84 of his Supplemental Report, Dr. Horowitz refers to a "3-input bubbled-AND gate," but the thing he is describing is specifically shown in the SMP260 data sheet as an NOR gate. Even though the data sheet shows a NOR gate, Dr. Horowitz confirmed during his deposition that he thinks the SMP260 really incorporates an AND gate, drawn poorly, because the drafters were lazy. [Horowitz 1/31/07 deposition at 16-17.] Dr. Horowitz clearly wants there to be an AND gate because the patent has an AND gate, but that is not what's shown, and the only way for Dr. Horowitz to reach his opinion is to ignore what is shown in favor of something that is not shown.

72. As with many of his contentions, Dr. Horowitz does not address the claimed function for the soft start circuit at all in his report regarding the SMP260. Specifically, he fails to identify any signal instructing the drive circuit to disable the drive signal during "at least a portion of said maximum time period." This may be because no such signal is present. Because the SMP260 effectuates soft start in a fundamentally different way, with a fundamentally different circuit structure using summed currents to alter the feedback signal, the claimed signal is simply not present.

73. Dr. Horowitz also argues that the SMP260 and the Keller article render Claim 9 of the '366 patent obvious if they do not anticipate, but I disagree with this contention. Dr. Horowitz's sole argument for modifying the SMP260 in this manner is that one could substitute voltage signals for the current signals taught in the SMP260 [Horowitz Supplemental Report ¶ 87 and chart C10 at 26-27], but he fails to explain why anyone would make such a modification. Even if one were to modify the SMP260 soft start, why not clamp the voltage feedback signal with the voltage soft start signal like many prior art circuits did instead of discarding the contents of the SMP260? Dr. Horowitz refers to the TEA2262's use of voltage signals in this section, seemingly conceding that one would need something more than just the SMP260 to make it obvious to re-design of the circuit with voltage signals in the manner he suggests. Nor does such a modification result in the claims because it would still result in a single ramp operation rather than the structure and operation of the claimed circuit. Regardless of whether or not Dr. Horowitz's contention regarding the SMP260 requires a combination with the TEA2262, his suggestion that one would redesign the SMP260 circuit to read on Claim 9 is pure hindsight and contrary to the evidence of secondary considerations.

**c. SMP3 + Goodenough article**

74. Dr. Horowitz also relies on a number of items related to the PI SMP3 part, including the data sheet, schematics, and an article by Frank Goodenough, but these materials do not anticipate or render obvious claims 9 of the '366 patent, as they do not teach, suggest or enable the claimed soft start circuit of the '366 patent.

75. As noted in my prior responsive report, the Goodenough article does not describe the claimed soft start circuit of the PI patents. During his deposition, Dr. Horowitz argued that

the Goodenough article suggests there is soft start, but that's a strange way to describe the article, given that it does not describe any structural details that could be read on the claimed soft start circuit. Instead, Goodenough makes a brief mention of a delay in turning on, using an internal capacitor connected to an intermediate stage of the error amplifier. There is no mention of gradually increasing the switch pulses or other description generally associated with a soft start function. Even if one looks past what is actually stated, Goodenough at best suggests the conventional soft start in which the feedback signal is artificially held low and allowed to rise in a controlled fashion using a capacitor and voltage clamp. Such a hypothesized teaching does not describe or suggest the claimed soft start circuit.

76. Internal soft start functionality (or soft start functionality of any kind) was not described or shown in the data sheet for SMP3, and the SMP3 schematic diagrams show that what is described in the article would not have worked to provide soft start. The claimed internal soft start simply wasn't in the SMP3. I note that in his Supplemental Report, Dr. Horowitz has backed off of his previous opinion that the SMP3 circuit has soft start functionality, now opining that the SMP3 does not have "effective" soft start functionality. [Horowitz Supplemental Report at 20 fn. 40.] Yet, despite this admission, Dr. Horowitz still asserts that the SMP3 schematics demonstrate the claimed soft start circuit. As explained in my previous report, I disagree with Dr. Horowitz that the SMP3 schematics demonstrate the claimed soft start circuit. The text of Dr. Horowitz's Supplemental Report provides no explanation of what portion of the SMP3 schematic allegedly shows the claimed soft start circuit, and the associated claim chart (C13) contains the same errors as Dr. Horowitz's earlier report. Again, I disagree with Dr. Horowitz's explanation of how the circuit on page 14 of the SMP3 schematic diagrams works. Dr. Horowitz states: *As the voltage on the node SFT_STR rises, the voltage on VOUT also rises.* This is not

correct. As the voltage on the capacitor on the test pad ramps up, VOUT will remain clamped low and duty cycle will be minimum or zero. Nothing will happen until the capacitor charges to approximately 1.25V, after which time VOUT will be controlled by the input VIN-. This agrees with how the Goodenough article describes the circuit operation: *Until the capacitor is fully charged, the error amplifier output is clamped low, limiting the duty cycle and peak current of the switch during startup.* [FCS0528088.] Thus the circuitry pointed to by Dr. Horowitz is merely a delay circuit, and does not provide soft start functionality.

77. Dr. Horowitz is also incorrect when he states in paragraph 90 of his Supplemental Report that the SMP3 contains a linear analog ramp that is the same as the claimed soft start signal of the patent. The signal Dr. Horowitz points to is not the cyclical ramp signal of the patent. Because the signal he identifies is not a repetitive signal, it is not surprising that Dr. Horowitz also fails to identify a number of the required structures for the claimed soft start circuit anywhere in the SMP3, including the latch and AND gate that Dr. Horowitz previously conceded were required under the Court's claim construction and which would only be needed in the case of a cyclical soft start signal. Nor does Dr. Horowitz identify the separate soft start comparator of the claimed circuit. This is because, as with the conventional prior art, the hypothesized SMP3 soft start operates on the feedback signal, rather than in the feedback-independent manner of the claimed soft start circuit.

78. In footnote 40 of his Supplemental Report, Dr. Horowitz belatedly concedes that the actual SMP3 circuit described in the schematics would not provide an "effective" soft start, and in order to accomplish that function would have to be redesigned to have smaller current or a larger capacitor. Beyond that change, further redesign would have to be done to lower the gain of the comparator sensing the capacitor ramp. However, even if all of that was done – with no

explanation for how or why it might be done, or by whom[3]—the result still wouldn't have the required structures as explained above.

79. Dr. Horowitz also contends that the Goodenough and SMP3 references render Claim 9 of the patent obvious, but given the numerous changes one would have needed to make to redesign the SMP3 circuit to even perform a soft start function at all, let alone meet the limitations of Claim 9 as described above, there is simply no way one of ordinary skill in the art would have found Claim 9 obvious in light of the SMP3. In paragraph 92 of his report, Dr. Horowitz admits that the SMP3 "soft start" is meant to clamp the output of the error amplifier, but as with the other modifications discussed above, he provides no explanation as to why one would change to another soft start configuration with separate comparators. Nor is there any justification for why one would modify the single ramp soft start to use a repeating signal with a latch/AND gate circuit. The only explanation for Dr. Horowitz's conclusion is that he is using hindsight to try to fit the SMP3 and Goodenough within the limitations of Claim 9. The fact that no one ever did make such modifications, despite the incentives to do so and other secondary considerations, strongly compel the conclusion that the claimed invention is not obvious.

80. The '366 soft start circuit operates by comparing a fast ramp signal to a slow ramp signal. The alleged "soft start ramp" identified by Dr. Horowitz in the SMP3 is compared to a fixed reference voltage to generate the turn-on delay discussed above. Thus, as part of his redesign of the SMP3, Dr. Horowitz would presumably redesign the reference section also. This would complete the hindsight redesign, tossing out what is actually in the SMP3 and substituting the claimed soft start circuit to impermissibly arrive at an invalidating reference.

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[3] Dr. Horowitz effectively conceded that to even begin to do such a modification, one of ordinary skill would need to have the schematics of the part, or I presume would need to reverse engineer the device. Horowitz 1/31/07 deposition at 21:20-22:7.

**4. General Response to Dr. Horowitz's Report regarding the '851 Patent**

81. In general, as discussed in my previous report and again below, Dr. Horowitz's Supplemental Report relies in substantial part on references that describe fixed frequency operation, the very operation that the '851 patent is designed to avoid. These references do not vary frequency over a range as claimed, or achieve the benefit of EMI reduction, thus providing further evidence that Dr. Horowitz's invalidity contentions can't be correct.

82. In addition, Dr. Horowitz again relies on references that have discrete implementations making use of external signals to alter operating frequency. In the introductory discussion of the '851 patent in paragraph 103 of Dr. Horowitz's supplemental report, he ignores that the patent is about internal circuits and signals, again discussing more general "soft start" and "frequency variation" technology. The '851 patent clearly distinguishes such conventional signals from the claimed invention, first in the title ("integrated soft start and frequency jitter") and also several times in the body of the patent. [See, e.g., col. 6, lines 10 - 17; col. 11, lines 43 - 50; col. 4, lines 21 – 23.] The Court's construction of the term "frequency variation signal" confirms that the claims require an internal signal, which Dr. Horowitz quotes in paragraph 94 of his Supplemental Report, but then proceeds to effectively ignore.

**5. Detailed Response to Dr. Horowitz's Claim Charts regarding Claim 1 of the '851 patent**

**a. TEA2262 + AN376**

83. As noted above, I have seen no evidence suggesting that the documents associated with the TEA2262 device should be treated as a single reference as Dr. Horowitz does in his report. Because the elements of the claims are not present even when the disclosures are treated together, I presume for the purposes of my rebuttal that treating them together is appropriate.

84. None of the TEA2262 references anticipates or renders obvious Claim 1 of the '851 patent. These references fail to teach or suggest the frequency variation circuit and frequency variation signal, the oscillator with a frequency that varies over a frequency range according to the frequency variation signal, and the oscillator providing a maximum duty cycle signal as required in the asserted '851 Claims.

85. The TEA2262 lacks the claimed frequency variation circuit and frequency variation signal. The TEA2262 changes between two fixed frequencies when the device is turned on. There is one fixed frequency during startup, and another fixed frequency during post-start up operation – the circuit operates at ¼ frequency during startup and then it runs at full frequency the rest of the time. The oscillator operates at 1/4 frequency until the voltage on the external soft-start capacitor is enough to exceed a threshold (2.5V), and then it runs at full frequency during normal operation. This disclosure is nothing like the cycling of switching frequency to minimize EMI during normal operation as described in the '851 patent, and it cannot possibly do anything to solve the EMI problem, the very purpose of the invention of the '851 patent. Accordingly, the signal Dr. Horowitz labels as the "frequency variation signal" does not function to cyclically vary in magnitude during a fixed period of time to modulate the frequency of an oscillation signal within a predetermined frequency range as required under the Court's construction

86. Dr. Horowitz opines that the frequency shift from f/4 to f cyclically occurs during "burst mode" which occurs immediately after start up and when the TEA2262-based power supply is operating under low load conditions. This theory is flawed for several reasons. First, as explained in the TEA2262 documents, the burst mode operation varies with line and load variations, and Dr. Horowitz concedes this fact. [Horowitz 1/30/07 deposition at 98:24-99:4.]

Thus, even if there were frequency changes occurring, they would be of the type expressly criticized by the text of the patent and excluded by the Court's construction of frequency variation signal. Next, and most critically, during burst mode the frequency of the TEA2262's oscillator ***remains fixed***. This fixed frequency operation is explained in the 2262 datasheet, and also in AN376. [See, for example, FCS0303076 and page 3 of AN376.] And while Dr. Horowitz belatedly admitted during deposition he did not know at the time of signing his report what was happening with the oscillator frequency (and the "tests" he presented with his report are devoid of any oscilloscope plots of the critical pin signal that would have established the point), after his report was served he conducted further experiments that conclusively proved that the frequency of the oscillator remains fixed when the TEA2262 device is operating in the burst mode described in its literature. Exhibit 1 to this report shows the results of tests I performed on Dr. Horowitz's test board in his lab, confirming this fixed frequency operation during burst mode.

87. Dr. Horowitz at deposition admitted that the burst mode as taught in the TEA2262 data sheet operates with fixed frequency [Horowitz 1/30/07 deposition at 95:3-16], and thus we agree that the TEA2262 literature relied on by Dr. Horowitz does not teach or suggest the claimed invention of the patent. After submitting his Supplemental Report and doing additional measurements that disproved his original position, Dr. Horowitz came up with another theory, this one so strange that he must make up yet more terminology to describe it. He is now relying on a fictitious "discontinuous burst mode," for his argument that the TEA2262 teaches the frequency variation of Claim 1 of the '851 patent. This theory is not found anywhere in his Supplemental Report – it appeared for the first time during his deposition – and it has no basis in the teachings of the references Dr. Horowitz cites. Dr. Horowitz admitted during his deposition

that the TEA2262 literature does not show this "discontinuous burst mode" and that he made up the term. [Horowitz 1/30/07 deposition at 93:14-19.]

88. Dr. Horowitz's belated argument regarding the made up "discontinuous burst mode" is based on a test circuit Fairchild engineers built for Dr. Horowitz. The circuit Dr. Horowitz is relying on uses an abnormal choice of output capacitor value and "operates" at such a low load current that the TEA2262 is intermittently turning off. Dr. Horowitz admitted in deposition that such a mode of "operation" is not described in any of the TEA2262 literature, he has no knowledge of anyone ever using the part in such a manner, and that with respect to regulation, his circuit was "clearly not doing a very good job." [Horowitz 1/30/07 deposition at 134:3-22; 138:1-10; 140:6-10.]

89. Dr. Horowitz's "discontinuous burst mode" occurs with a load current of approximately 0.3% of full scale. In addition, an abnormally large output capacitance was used. AN376 shows the use of a 470uF output capacitor, but Dr. Horowitz used an effective value of 4870uF, more than 10 times larger. Dr. Horowitz admitted in deposition that he relied on the value chosen by the Fairchild engineers who designed the board [Horowitz 1/30/07 deposition at 117:23-118:5 and 116:6-7], and would himself have used a well known formula (I=C*dV/dT) to calculate the value of capacitor that he would have chosen. [Horowitz 1/30/07 deposition at 115:20-116:4.] Assuming the same 5A maximum load current and .1V -.5V maximum droop posited by Dr. Horowitz, the calculated value of output capacitor is approximately 250uF-1250uF, about 4-20 times smaller than the value used in the circuit he is relying on.

90. In burst mode operation (the burst mode described in the TEA2262 literature), switching pulses transfer energy to the circuit output and auxiliary winding, if used, for supplying power to the TEA2262. Once the output voltage is charged up, switching stops and

the output voltage starts to droop. When the TEA2262 senses that the output voltage has drooped enough, switching is resumed and the output is once again charged up. This intermittent switching process then repeats.

91. With the very large output capacitor and very low load current used in Dr. Horowitz's testing, the output voltage droops so slowly that switching is held off long enough for the supply voltage for the TEA2262 to droop below its undervoltage lockout threshold of approximately 8.5V. Once this happens, the TEA2262 shuts down (as evidenced in the TEA2262 oscillator turn off seen in Dr. Horowitz's later test results), and can not turn on again to provide any regulation until a startup resistor charges the supply voltage to be above the turn-on threshold of the TEA2262 undervoltage lockout circuit (approx. 12V). This slow startup process keeps switching off so long that there is approximately 0.9 seconds without any switching, leading to an output droop of over 3V. This is about 20 times higher than the output droop listed in AN376 [page 32] for an opto-coupled application operating in the actual documented burst mode. Exhibit 1 to this report shows graphs of test results I obtained in Dr. Horowitz's lab using the same test circuit used by Dr. Horowitz. These graphs confirm the operation (or more properly lack of operation) of the TEA2262 as described above.

92. I see no reason why anyone would attempt to operate the TEA2262 in such a configuration under such conditions as relied upon by Dr. Horowitz. Dr. Horowitz relies on running his test board at a supply voltage range beyond that recommended in the TEA2262 data sheet. One of skill in the art would not look at the TEA2262 literature, disregard its requirement for proper supply voltage, operate the part with such a large output capacitor and in an undocumented way, and build a circuit that does not provide good regulation – except in hindsight to try to invalidate a patent.

93. Even if, inexplicably, one were to consider the cyclical startup behavior of Dr. Horowitz's circuit to be a legitimate way that someone would use the TEA2262, it would still not have the claimed frequency variation. The cyclical switching between f and f/4 in such a circuit would be triggered by the supply voltage for the chip, an externally generated signal (contrary to what is required by the Court's construction) and distinguished in the patent because it is line and load dependent.

94. Dr. Horowitz also produced some notes he provided to the Fairchild engineers regarding how to set up the circuit board. These notes show that Dr. Horowitz recommended using a fixed 12V supply voltage for the chip. [See FCS1693510 (Dr. Horowitz's original sketch to Fairchild).] If the Fairchild engineers had done what Dr. Horowitz asked, Dr. Horowitz would never have be able to induce the repeating pattern of turning off the chip he attempts to rely on. Instead, the Fairchild engineers provided an auxiliary winding for the chip supply voltage and the very large output capacitor that lead to intermittent chip operation. Dr. Horowitz also told the Fairchild engineers to keep the supply voltage for the TEA2262 within normal operating parameters [see Horowitz 1/30/07 deposition at 108:4-15, FCS1693524, and FCS1693510 (which spells out keeping the chip supply between 9.5 and 15V)], but the Fairchild engineers ignored that as well. Dr. Horowitz appeared to not even realize that the mechanism bringing about the undocumented behavior he now relies on was contrary to the design parameters of the device until he witnessed me testing the board during a visit to his lab just before his deposition.

95. Even assuming the TEA2262 could have been modified to create the "discontinuous burst mode" theory Dr. Horowitz developed since he provided his Supplemental Report, no one would want to use it in that configuration, nor have I seen any evidence that anyone ever configured the TEA2262 in such a manner before the Fairchild engineers did so for

Dr. Horowitz to use in this case. Because there is no evidence that anyone actually created a circuit like Dr. Horowitz and Fairchild, it is not "prior art" and therefore cannot be relied upon to invalidate the claims. Even ignoring all of this, and the absurd lengths Fairchild and Dr. Horowitz have gone to fabricate something that even remotely looks like the patent, his "discontinuous burst mode" still does not meet the frequency variation limitations of the claims because any frequency shift is a jump between two fixed frequencies and not a variation within a frequency range, the operation would change considerably with line and load variations, would only exist under impossibly rare conditions when EMI would be the least of the designers worries, and it would do nothing to provide the EMI benefits under normal operating conditions that are the very reason for the '851 patented invention.

96. The TEA2262 also does not anticipate '851 Claim 1 because it is missing an additional claim limitation other than the frequency variation limitations; the oscillator producing a maximum duty cycle signal. Dr. Horowitz asserts that the TEA2262 shows a pulse signal that corresponds to the claimed maximum duty cycle signal. [Horowitz Supplemental Report chart D5.] He is incorrect, however, because the signal he points to in the block diagram does not control the maximum duty cycle but, rather, is a pulse signal to initiate a switch cycle. As Dr. Horowitz correctly points out elsewhere in his report and claim charts, in the TEA2262 a "maximum duty cycle conduction signal (β)" is instead generated by an "auxiliary PWM circuit," not an oscillator. [See, e.g., FCS1687356.] I agree with Dr. Horowitz's original understanding of how the TEA2262 controls its maximum duty cycle, as explained during his first deposition. [Horowitz 2/4/06 deposition at 180:17-182:15.] This explanation, that the maximum duty cycle signal is the output of the comparator comparing the output of the "soft start" block with the PWM ramp, is consistent with all of the TEA2262 literature, including the

application note explanation and the label "$T_{on(max.)}$" associated with the soft start box in the block diagram. Of course, Dr. Horowitz recognizes that his original understanding would mean that the TEA2262 does not include a required claim element so he was forced to change his position with essentially no justification. And as he finally conceded, he has no evidence to prove his new theory on maximum duty cycle, and for that reason alone Fairchild cannot establish invalidity under the required standards. [Horowitz 1/30/07 deposition at 142:8-150:2.]

97. Given the numerous and significant differences identified above, the TEA2262 as described in the literature relied upon by Dr. Horowitz does not include the claimed frequency variation signal, frequency variation circuit, or maximum duty cycle signal produced by an oscillator as set forth in Claim 1 of the '851 patent. It would have required a great deal of effort to re-design the TEA2262 in a manner that meets the limitations of the claims of the '851 patent, and one would have to ignore far too much of what is disclosed in the references to do so. Nor is there any evidence to suggest that one of skill in the art would ignore the teaching of the references to use the conventional EMI filters in favor of a drastic redesign of essentially the entire device to obtain a controlled and cyclic frequency variation during normal operation with some mechanism that would be compatible with the soft start and start-up frequency shift that was already there. Nor is there any evidence that anyone, including SGS-Thomson, ever modified a TEA2262 or used it in a power supply that included frequency jitter. This and other secondary considerations discussed above are contrary to any claim of obviousness. As such, I also disagree with respect to Dr. Horowitz's hindsight conclusion that the TEA2262 would render Claim 1 of the '851 patent obvious.

**b. Martin**

98. Dr. Horowitz opines that the Martin patent anticipates Claim 1 of the '851 patent, but his opinions rely on a number of statements that certain elements are "inherent" in the art. I take these statements as concessions that Martin does not expressly teach the elements and I agree. Regardless of what Dr. Horowitz means when he argues that certain things are "inherent," however, it is clear that several key elements are entirely missing from this reference.

99. First, the system disclosed in Martin does not include an oscillator providing a maximum duty cycle signal. Martin says nothing at all about how its maximum switch timing is controlled, if at all. Further, the "VCO" shown in the Martin figure is shown having a single output, and that output cannot be both the oscillation signal and the maximum duty cycle signal. During his deposition, Dr. Horowitz admitted that the oscillator in Martin does not show a maximum duty cycle signal. [Horowitz 1/30/07 deposition at 158:17-19.] There are a number of ways to control maximum switch conduction without resort to a maximum duty cycle signal from an oscillator. For example, the LT1950 and the TEA2262 use signals outside of their oscillators to achieve a maximum duty cycle. In some designs, no maximum duty cycle limit is needed or used at all. For example, the Micrel MIC2207 and MIC4722, the Maxim MAX887, and the Fairchild FAN6520A all can operate at 100% duty cycle. The Fairchild FAN6520A shows a cycle start pulse coming out of the oscillator, just like the TEA2262. Another Fairchild part, the KA7500C, does use a maximum duty cycle, but it uses an external voltage input to control dead-time. Because the inclusion of an oscillator providing a maximum duty cycle signal is only one of many possibilities, such a signal which is a required element of the claims cannot be considered inherent in the disclosure of Martin.

100. I agree with Dr. Horowitz that the Martin reference does not show an oscillator that produces a maximum duty cycle signal. If Dr. Horowitz is now taking the position that there would inherently be an oscillator that produced a maximum duty cycle signal in PWM block 14, then I would disagree. The Martin circuit already has an oscillator, VCO 13, and the only reason to add another one would be to superfluously add another one to add a claim element.

101. Next, Martin fails to disclose the drive circuit limitation of '851 Claim 1. Dr. Horowitz opines that the claimed drive circuit is inherent in Martin, but this is not correct. In paragraph 113 of his Supplemental Report and the corresponding claim charts, Dr. Horowitz assumes that Martin teaches a voltage mode device, but Martin is silent on what is in the "PWM" block. This could be a current mode device, a bang-bang converter, or something else, and Dr. Horowitz admitted during his deposition that Martin did not say (and that he could not say) whether it was current mode or voltage mode. [Horowitz 1/30/07 deposition at 160:14-161:13.] It is thus not inherent that the device is voltage mode as required for the claimed drive circuit.

102. Finally, Martin does not disclose a frequency variation circuit with a frequency variation signal that is an "internal" signal because the circuit shown in Martin is a discrete implementation and doesn't have the integration necessary for such an internal signal. During his deposition, Dr. Horowitz stated that Martin "suggests" implementation with discrete components. [Horowitz 1/30/07 deposition at 161:14-162:19.] Martin more than suggests it, Martin explicitly teaches the use of discrete components in its language. For example by referring to its EPROM as a "storage device" and by referring to the various "blocks" in the figure as "components." Referring to integration, there are two commonly used meanings for "device" and "component." The first refers to an individual circuit element, for example, a single resistor or a single transistor. Each is a "device" or a "component." A schematic showing

all of the individual components in a circuit is often called a "device level" or "component level" schematic. This is not what is shown in Martin. The other common meaning of "device" or "component" is a complete integrated circuit part. For example, a packaged integrated circuit memory chip would be called a "device." This is what is shown in Martin. Because the only reasonable interpretation of the Martin disclosure to one of ordinary skill is of a discrete circuit implementation, the Martin patent cannot and does not disclose the claimed frequency variation elements.

103. Because the Martin circuit is built using discrete blocks, it lacks the internal frequency variation signal required by the Court. Dr. Horowitz attempts to bypass the Court's construction by taking the position that "internal" as used by the Court refers to something deliberately created by a circuit doing the PWM control, and that it has nothing to do with whether or not a circuit is integrated. [Horowitz 1/31/07 deposition at 183:7-21.] This is not correct. The '851 patent is clear about what "internal" means, and that integration is not irrelevant as proposed by Dr. Horowitz. The title of the patent is "Offline Converter with Integrated Soft Start and Frequency Jitter." The objects of the invention describe "integrated frequency variation capabilities." Those of skill in the art know that "internal" components are on the integrated circuit chip, and that signals that are "internal" are generated on the integrated circuit chip. Components and signals that are "external" are not on the integrated circuit chip. For example, Figure 1 of the '851 patent shows an integrated circuit, the SMP211. Soft start capacitor 110 is not on the SMP211 chip and is therefore "external." Resistor 140 is outside the SMP211, and signal 135 is generated outside the SMP211 (by operation of the input ripple), and they are therefore also "external." Whatever components are inside the SMP211 are "internal." Dr. Horowitz has no problem distinguishing between the common meanings of "internal" and

"external" when referring to soft start capacitors, but has improperly switched his understanding of what "internal" means with respect to the Court's requirement for a frequency variation signal.

104. Dr. Horowitz also contends that it would have been obvious to modify Martin in the manner of the invention of Claim 1 of the '851 patent without reference to any other piece of art [Horowitz Supplemental Report ¶ 115], but he provides no support or claim chart for this opinion. Instead, Dr. Horowitz relies on the teachings of a number of other references in paragraph 116 of his Supplemental Report to make his case for obviousness. Given the number of gaps and differences between Martin and the invention of Claim 1 of the '851 patent, it would not have been obvious to modify Martin by itself in the manner of the invention of Claim 1 without using the claim as a roadmap to reconstruct the invention.

**c. Martin + TEA2262**

105. Dr. Horowitz next opines that Martin and the TEA2262 references described above would, in combination, allegedly render Claim 1 of the '851 patent obvious, but he is incorrect.

106. Initially, as explained above, neither Martin nor the TEA2262 has an oscillator that produces a maximum duty cycle signal, and any combination of these references would therefore lack this element. As also explained above, neither Martin nor the TEA2262 teach or suggest the claimed frequency variation elements and, therefore, even in combination such elements are lacking.

107. Further, while Dr. Horowitz contends that one of ordinary skill would be capable and motivated to combine the references to achieve the claimed invention, I disagree. Because

the circuits themselves are duplicative and fundamentally incompatible, a substantial amount of design work, including the addition of further circuit components around what is shown in the references, would be required to even hope to operate them together. Dr. Horowitz apparently recognized this in his recent deposition when he "clarified" his testimony to assert that one of ordinary skill would rely on the "teachings" of the references and not attempt to combine the actual circuits disclosed. [Horowitz 1/31/07 deposition at 4-5.] Boiled down, what Dr. Horowitz is asserting is that one of *ordinary* skill would pick and chose only *some pieces* of the references and using the various "concepts" would redesign the blocks and, further, come up with a way to integrate them all together in a single integrated circuit device -- including using a maximum duty cycle signal not shown in either as a "design choice." As noted above, Dr. Horowitz's lack of relevant experience with the actual effort required for such an undertaking explains how he can so blithely – and incorrectly – make his assertions. That Dr. Horowitz's argument is nothing more than impermissible hindsight is clear, and confirmed by the facts that no one, including all the various companies building products in this area (SGS-Thomson being one), ever produced anything that looked like Dr. Horowitz's hypothetical combination even though the need was there and the commercial success of Power Integrations' and Fairchild's products establish the financial incentive to do so.

**d. Martin + SMP240/260**

108. Dr. Horowitz states that the combination of Martin and the SMP240/260 render Claim 1 of the '851 patent obvious, but this argument is also flawed. As explained above Martin fails to disclose an oscillator that produces a maximum duty cycle signal as required by Claim 1 of the '851 patent. The SMP260 also does not include a maximum duty cycle signal provided by

an oscillator; its maximum switch conduction time is, in fact, controlled by a completely different mechanism. Any combination of these references would therefore lack this element.

109. Next, as explained above, Martin fails to disclose the drive circuit limitation. As admitted by Dr. Horowitz, the SMP260 device is a current mode device, so it also lacks both the drive circuit limitation and the oscillation signal of the claim. Accordingly, even in combination, these claim elements are missing.

110. Dr. Horowitz simply wishes these flaws away by arguing that these various claim limitations are "conventional." In other words, not only would one of ordinary skill allegedly redesign what is shown in the references to make them compatible in combination (as explained above with regard to Martin + the TEA2262) but would also throw out the mechanisms used by the SMP260 to control maximum duty cycle and PWM control in favor of totally different methods and, again, figure out how to integrate it all in a new device. I can conceive of no way one of ordinary skill could ever achieve such a design, and Dr. Horowitz's assertion that '851 Claim 1 is obvious is again nothing more than hindsight. As explained above, the non-obviousness of the combination is again strongly supported by the evidence of secondary considerations present here.

**e. Martin + SMP211**

111. Next, Dr. Horowitz asserts that a combination of the Martin reference and the SMP211 would render Claim 1 of the '851 patent obvious, but he again is incorrect. As an initial note, the SMP211 was cited to the patent office and the claims were allowed in view of it.

112. As explained above, the Martin reference fails to teach the claimed frequency variation elements. Nor does the SMP211 itself teach or suggest any frequency variation at all.

In order to find such a suggestion, Dr. Horowitz has to look to the specification of the patent itself, but the specification is not prior art and cannot itself be used to support an obviousness argument. Thus, the combination of the references themselves would not include these critical claimed elements.

113. Dr. Horowitz suggests that it would not take any significant innovation to combine the *benefits* of Martin and the SMP211, but he is incorrect. As noted above, it is not a trivial matter to combine what is disclosed in Martin with an integrated PWM IC, like the SMP211, that includes redundant and incompatible circuit structures. Dr. Horowitz provides no discussion of how his proposed redesign to combine Martin with the SMP211 would be done. Because such a redesign, as explained above, would require all manner of innovation to change the actual disclosures into something that could be implemented in reality, it would simply be beyond the capability of and not obvious to one of ordinary skill, without, of course, the '851 patent as guide. As explained above, the non-obviousness of the combination is strongly supported by the evidence of secondary considerations present here. Dr. Horowitz's opinion is again pure hindsight.

### 6. Detailed Response to Dr. Horowitz's Claim Charts Regarding Dependent Claim 4 of the '851 Patent

114. Dr. Horowitz's Supplemental Report also contains a few contentions with respect to dependent Claim 4 of the '851 patent. Specifically, in paragraphs 117-123 (and charts D4, D9, and D11), Dr. Horowitz states that the TEA2262 anticipates and/or renders obvious, or that a combination of the Martin patent with either the TEA2262 or the SMP240/260 renders Claim 4 obvious. I disagree on all counts. In addition to the numerous missing elements of the

independent Claim 1 discussed above, I note the following additional distinctions between the prior art and Claim 4 of the '851 patent.

**a. TEA2262**

115. The TEA2262 cannot anticipate Claim 4 of the '851 patent because it has no frequency variation circuit, no cyclical frequency variation signal, no oscillator that produces a maximum duty cycle signal, and it implements soft start with a structure that is not the same or equivalent to the claimed soft start circuit. The first three missing elements were discussed above with respect to independent Claim 1 of the '851 patent on which Claim 4 depends, and I addressed the lack the claimed soft start circuit in my discussion of Claim 9 of the '366 patent above.

116. Further, the claimed function recited in Claim 4 is not present in the TEA2262 device. While a signal from the "soft start" block is compared to a PWM ramp signal, the output of the soft start block is itself a different signal from the voltage on the capacitor identified by Dr. Horowitz as the "frequency variation signal." Because Dr. Horowitz at present doesn't even know how the signal from the soft start box relates to the voltage on the external capacitor (as explained above he has waffled on how the device controls its maximum duty cycle and admitted he doesn't know what is inside the soft start box), I fail to see how Fairchild can meet its burden to establish that the function recited in the claim is performed by the asserted prior art.

117. As explained above, the numerous and significant differences between the subject matter of Claim 1 and the claimed soft start circuit on the one hand and the TEA2262 on the other make it unreasonable to believe one of skill in the art would have found it obvious to modify the TEA2262 to meet the limitations of the Claim 4 of the '851 patent. Only with hindsight can Dr. Horowitz say that one of skill in the art would re-design the circuit in this

manner. As such, I disagree with Dr. Horowitz's conclusion that the TEA2262 renders Claim 4 of the '851 patent obvious.

**b. Martin + TEA2262**

118. Dr. Horowitz's contention that the TEA2262 would render Claim 4 of the '851 obvious in connection with the Martin patent is also unsupported. As explained in detail above, the references, alone or in combination, are missing several key requirements of independent Claim 1. Moreover, Martin does not disclose soft start at all, and the TEA2262 is also missing the claimed soft start circuit, as I explain above with respect to Claim 9 of the '366 patent. As noted above the function of Claim 4 is not established by the TEA2262 and, as Martin has no disclosure of soft start at all, this flaw cannot be solved by the combination. For these, and all the reasons explained above regarding the non-obviousness of '851 Claim 1 and '366 Claim 9 in view of Martin and the TEA2262, Claim 4 is not obvious and Dr. Horowitz's opinion to the contrary is nothing more than hindsight.

**c. Martin + SMP240/260**

119. Dr. Horowitz's contention that a combination of the Martin and the SMP240/260 would render Claim 4 obvious is equally unsupported. As noted above, Martin does not teach any form of soft start, the SMP240/260 does not contain the claimed soft start circuitry, and both Martin and the SMP240/260 are missing numerous elements of the underlying Claim 1. Given these many and varied shortcomings, Dr. Horowitz's statement that one of skill in the art "would have been capable of creating such a circuit" misses the point, and it is inconceivable that one of skill in the art would combine and re-design the two references to produce the invention of Claim 4 of the '851 patent. Nor does Dr. Horowitz even attempt to explain how the different functions

would be combined with the specificity required by the function recited in Claim 4. Again, Dr. Horowitz's opinion can only be explained in terms of hindsight.

### 7. Detailed Response to Dr. Horowitz's Claim Charts Regarding Dependent Claim 14 of the '366 Patent

120. Dr. Horowitz's Supplemental Report also contains a number of contentions with respect to dependent Claim 14 of the '366 patent. Specifically, in paragraphs 93-102 (and charts C3, C4, C7, C8, C11, C12, C15, and C16), Dr. Horowitz states that several references anticipate or render Claim 14 obvious. I disagree on all counts. In addition to the numerous missing elements of independent Claim 9 discussed above, none of the references teaches the claimed frequency variation signal and circuit of Claim 14, as discuss above in connection with Claim 1 of the '851 patent. I note the following additional distinctions between the prior art and Claim 14 of the '366 patent.

#### a. TEA2262 + TEA2260 + AN376

121. Dr. Horowitz opines that the "TEA2260/1/2" anticipates or renders dependent Claim 14 of the '366 patent obvious. His arguments contain a number of flaws beyond the shortcomings of his contention regarding independent Claim 9 noted above.

122. First, as noted above in my discussion of Claim 1 of the '851 patent, Dr. Horowitz is incorrect in asserting that the TEA2262 discloses the claimed frequency variation signal. He repeats that assertion in the context of Claim 14 of the '366 patent [Horowitz Supplemental Report ¶ 97], but it is still incorrect. Dr. Horowitz has identified the "frequency variation signal" of the TEA2262 as being the voltage on the external capacitor, but as explained above, that signal lacks all the required characteristics provided for in the Court's construction. As also explained in detail above, there is no frequency variation functionality in any of the operating

modes disclosed in the documentation for the TEA2262. Dr. Horowitz's "discontinuous burst mode" argument is, as explained previously, fundamentally flawed.

123. Given the numerous differences between the TEA2262 and the invention claimed in dependent Claim 14, and the secondary considerations discussed above including the fact that no one ever modified or used the TEA2262 in the manner Dr. Horowitz suggests, I therefore disagree that the TEA2262 would render Claim 14 of the '366 patent obvious.

**b. TEA2262 + Martin**

124. Dr. Horowitz also opines that the combination of the TEA2260/1/2 references and the Martin patent would render Claim 14 obvious, but I disagree.

125. As noted above, Martin does not disclose soft start at all, and the TEA2262 is also missing the claimed soft start circuit and functionality. These flaws cannot be solved by combining the two references. As also noted above in my discussion of Claim 1 of the '851 patent, Martin and the TEA2262 are both missing the frequency variation limitations that are added in dependent Claim 14 of the '366 patent.

126. These fundamental differences between the TEA2262, Martin, and Claim 14 cannot be cured by combining the references, and Dr. Horowitz provides no explanation of why (much less how) one would combine the references in the manner recited in Claim 14 of the '366 patent. Dr. Horowitz's efforts to redesign the TEA2262 and the Martin patent to map them on to the claimed invention is total hindsight. There is simply no justification for suggesting that one of ordinary skill would substitute different functionalities from the ones chosen by the TEA2260/1/2 designers and Martin and then further combine them in just the right way to achieve the invention recited in Claim 14 of the '366 patent. As explained above, the secondary considerations and the objective facts are contrary to Dr. Horowitz's conclusions.

**c. TEA2262 + Wang**

127. Dr. Horowitz also opines that the combination of the TEA2260/1/2 references and the Wang article would render Claim 14 obvious, but I disagree for much the same reason as described above with respect to the alleged combination of Martin with the TEA2260/1/2, because Wang does not provide teaching that is substantially different from that of Martin. As with Martin, Wang does not discuss soft start at all and thus cannot add to the deficient teaching of the TEA2262 in that respect. Similarly to the analysis above with respect to Martin in the context of Claim 1 of the '851 patent, Wang does not include the required oscillator providing a maximum duty cycle signal, frequency variation circuit with a frequency variation signal, or the drive circuit limitations, nor does Wang provide any details or teaching with respect to an integrated implementation of the corresponding limitations. The fact that Dr. Horowitz does not assert Wang itself in the context of the '851 patent claims shows that even he believes the Wang reference is less relevant to the claimed invention.

128. As with the prior combination of the TEA2262 and Martin, Dr. Horowitz fails to explain why (or how) one would combine disparate teachings of the TEA2262 and Wang. If anything, it is more difficult to conceive of a combination of these items because of the specific nature of the implementation of a counter, ROM, and multiple DACs shown in Wang. Dr. Horowitz's efforts to redesign Wang and the TEA2262 to map them on to the claimed invention is total hindsight, and the objective evidence, including that no one ever combined a circuit like shown in Wang with a PWM controller like the TEA2262, establishes it would not have been obvious to combine these reference in the manner of Claim 14 of the '366 patent.

**d. SMP260 + Martin**

129. Dr. Horowitz also opines that the SMP260 renders Claim 14 of the '366 patent obvious in light of the Martin patent, but he is incorrect.

130. As noted above, Martin makes no mention of soft start, and the SMP260 does not disclose or suggest the soft start circuit of independent Claim 9. Dr. Horowitz does not even suggest that the SMP260 contains the frequency variation limitations of the claim, and as noted above the Martin patent is also missing these limitations. Therefore, the required limitations are missing in the combination, even if one presumes such a combination is motivated or even possible.

131. Dr. Horowitz provides no explanation, however, as to how one of ordinary skill would allegedly combine these references - would he throw out the ROM in the Martin circuit because it would make practical integration difficult? Any such efforts to redesign the prior art to ignore its fundamental teachings is simply unjustifiable. The combination of these references cannot, therefore, render Claim 14 of the '366 patent obvious, and Dr. Horowitz's efforts to redesign Martin and the SMP260 to map them on to the claimed invention is total hindsight. Again, the objective evidence and secondary considerations strongly support the conclusion that the claims are not obvious.

**e. SMP260 + Wang**

132. Dr. Horowitz also opines that the SMP240/260 renders Claim 14 of the '366 patent obvious in light of the Wang article, on virtually identical grounds as set forth above with respect to the combination of the SMP240/260 with Martin. As noted above, though, Wang does not add anything to the disclosure of Martin in any way that is meaningful to the discussion. Thus, like the combination of the SMP260 and Martin discussed above, the combination of the SMP260 with Wang does not render Claim 14 of the '366 patent obvious, and Dr. Horowitz's opinion is nothing more than impermissible hindsight.

**f. SMP3/Goodenough article + Martin (or Wang)**

133. Dr. Horowitz also similarly suggests that one of skill in the art would combine the SMP3/Goodenough references with either Martin or Wang in the manner set forth in Claim 14 of the '366 patent, but there is no basis for this contention. As noted above, the SMP3 has no soft start function at all and even if Dr. Horowitz's interpretation of the schematics were correct (it is not) the soft start function would be implemented with a circuit that is not the same or equivalent as that disclosed and claimed in the '366 patent. Nor would it have made sense to redesign the SMP3 to add a soft start circuit that has the required structure, when there were other (non-equivalent) soft start circuits in the prior art. Thus the combination fails to disclose the features of independent Claim 9. Further, the SMP3/Goodenough article also have no mention of frequency variation, nor does Dr. Horowitz claim otherwise. Instead, Dr. Horowitz says it would have been obvious to combine the SMP3 with the Martin patent to derive the invention of Claim 14, but yet again this is pure hindsight. Dr. Horowitz provides no explanation as to how or why one would modify the SMP3 to add the ROM-based circuit of Martin (or Wang); nor would the combination meet the requirements of Claim 14 because the combined implementation would, at best, be discrete and not integrated. If Dr. Horowitz posits that the ROM would be removed, this again is directly contrary to the teaching of Martin (and Wang) and amounts to a total rejection of the teachings of the references in favor of an undisclosed circuit which, coincidentally, looks more like the claimed invention. The hindsight of this approach is plain.

134. Given the substantial modifications necessary to combine Martin with the SMP3 to achieve the claimed invention, there is no way it would have been obvious to one of ordinary

skill in the art to do so in the manner set forth in Claim 14 of the '366 patent and all the objective facts and secondary considerations support that conclusion.

## X. CONCLUSION

135. In view of the above, it is my opinion that Claim 1 of the '876 patent, Claims 1 and 4 of the '851 patent, and Claims 9 and 14 of the '366 patent have not been shown to be invalid in view of any of the references or arguments presented in Dr. Horowitz's report.

136. In view of Dr. Horowitz's multiple changes of position during the course of this case, I reserve the right to offer additional opinions to respond to any new or modified arguments Dr. Horowitz may make, up to and including at the validity trial. For trial, I may prepare diagrams, charts and demonstrations that illustrate the issues presented.

Date: February 17, 2007

Robert Blauschild